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Reversible tumorigenesis by MYC in hematopoietic lineages.

Felsher DW, Bishop JM

Department of Medicine, G. W. Hooper Foundation, San Francisco, California, USA. felsher@itsa.ucsf.edu

The targeted repair of mutant protooncogenes or the inactivation of their gene products may be a specific and effective therapy for human neoplasia. To examine this possibility, we have used the tetracycline regulatory system to generate transgenic mice that conditionally express the MYC protooncogene in hematopoietic cells. Sustained expression of the MYC transgene culminated in the formation of malignant T cell lymphomas and acute myleoid leukemias. The subsequent inactivation of the transgene caused regression of established tumors. Tumor regression was associated with rapid proliferative arrest, differentiation and apoptosis of tumor cells, and resumption of normal host hematopoiesis. We conclude that even though tumorigenesis is a multistep process, remediation of a single genetic lesion may be sufficient to reverse malignancy.

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